

Section-by-Section Summary of H.R. 1068

Sec. 1. High-Performance Computing Research and Development Program

Amends section 101 of the High-Performance Computing Act of 1991 (HPC Act), which describes the organization and responsibilities of the interagency research and development program originally referred to as the National High-Performance Computing Program—and renamed the High-Performance Computing Research and Development Program in this Act. Requires the program to:

- Provide for long-term basic and applied research on high-performance computing;
- Provide for research and development on, and demonstration of, technologies to advance the capacity and capabilities of high-performance computing and networking systems;
- Provide for sustained access by the research community in the United States to high-performance computing systems that are among the most advanced in the world in terms of performance in solving scientific and engineering problems, including provision for technical support for users of such systems;
- Provide for efforts to increase software availability, productivity, capability, security, portability, and reliability;
- Provide for high-performance networks, including experimental testbed networks, to enable research and development on, and demonstration of, advanced applications enabled by such networks;
- Provide for computational science and engineering research on mathematical modeling and algorithms for applications in all fields of science and engineering;
- Provide for the technical support of, and research and development on, high-performance computing systems and software required to address Grand Challenges;
- Provide for educating and training additional undergraduate and graduate students in software engineering, computer science, computer and network security, applied mathematics, library and information science, and computational science;
- Provide for improving the security of computing and networking systems, including research required to establish security standards and practices for these systems.

Requires the Director of the Office of Science and Technology Policy (OSTP) to:

- Establish the goals and priorities for Federal high-performance computing research, development, networking, and other activities;
- Establish Program Component Areas that implement the goals established for the Program and identify the Grand Challenges that the Program should address;
- Provide for interagency coordination of Federal high-performance computing research, development, networking, and other activities undertaken pursuant to the Program;

- Develop and maintain a research, development, and deployment roadmap for the provision of high-performance computing systems for use by the research community in the United States.

Leaves substantially unchanged the provisions of the HPC Act requiring the Director of OSTP to:

- Provide an annual report to Congress, along with the annual budget request, describing the implementation of the Program, including current and proposed funding levels and programmatic changes, if any, from the previous year;
- Consult with academic, State, and other appropriate groups conducting research on and using high-performance computing.

Requires the Director of OSTP to include in his annual report to Congress:

- A detailed description of the Program Component Areas, including a description of any changes in the definition of activities under the Program Component Areas from the previous year, and the reasons for such changes, and a description of Grand Challenges supported under the Program;
- An analysis of the extent to which the Program incorporates the recommendations of the Advisory Committee established by section 101(b) of the HPC Act.

Requires the Advisory Committee to conduct periodic evaluations of the funding, management, coordination, implementation, and activities of the Program, and to report to Congress once every two fiscal years, with the first report due within one year of enactment.

Sec. 2. Definitions

Amends section 4 of the HPC Act to further elaborate on, or amend, the definition of terms used in the Act:

- “Grand Challenge” means a fundamental problem in science or engineering, with broad economic and scientific impact, whose solution will require the application of high-performance computing resources and multidisciplinary teams of researchers;
- “High-performance computing” means advanced computing, communications, and information technologies, including supercomputer systems, high-capacity and high-speed networks, special purpose and experimental systems, applications and systems software, and the management of large data sets;
- “Program” means the High-Performance Computing Research and Development Program described in section 101;
- “Program Component Areas” means the major subject areas under which are grouped related individual projects and activities carried out under the Program.